SUBSET 08 - STRUCTURAL
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STATE OF CONNECTICUT
ANTHONY A. MORETTI
LICENSED PROFESSIONAL ENGINEER

Anthony A Moretti
Parsons Brinckerhoff
Glastonbury, CT
2014.11.17 10:46:38
-05'00'

DESIGNED BY: PARSONS BRINCKERHOFF

REV.	DATE	REVISION DESCRIPTION	SHEET NO.

THE INFORMATION, INCLUDING ESTIMATED QUANTITIES OF WORK, SHOWN ON THESE SHEETS IS BASED ON LIMITED INVESTIGATIONS BY THE STATE AND IS IN NO WAY WARRANTED TO INDICATE THE CONDITIONS OF ACTUAL QUANTITIES OF WORK WHICH WILL BE REQUIRED.

Plotted Date: 11/7/2014

DESIGNER/DRAFTER: JLD
CHECKED BY: JLW

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

Filename: 16_B12SI_3010088_S12-000.dgn

SIGNATURE/
BLOCK:

PROJECT TITLE:
NEW HAVEN RAIL YARD
FACILITIES IMPROVEMENTS
YARD POWER UPGRADE

TOWN: NEW HAVEN

DRAWING TITLE:
STRUCTURAL
SUBSET COVER SHEET

PROJECT NO. 301-0144
DRAWING NO. S12-000
SHEET NO. 08.01

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Connecticut Department of Transportation
QA/QC Format Check

GENERAL STRUCTURAL NOTES:

1. DESIGN CODES AND CRITERIA:

   THE MINIMUM STRUCTURAL DESIGN SHALL BE IN ACCORDANCE WITH THE CONNECTICUT BUILDING CODE, IBC 2003, AND ASCE 7-02.

2. IN ADDITION TO THE BUILDING DEAD LOADS, THE STRUCTURE IS DESIGNED FOR THE FOLLOWING LOADS:

   LIVE LOAD

STAIRS, LANDINGS, ELEVATED PLATFORM	100 PSF
MECHANICAL EQUIPMENT	250 PSF
FOUNDATION SLAB	60 PSF

   SNOW LOAD

GROUND SNOW LOAD Pg	30 PSF
SNOW EXPOSURE FACTOR Ce	1.1
THERMAL COEFFICIENT Ct	1.0
SNOW LOAD IMPORTANCE I	1.0

   WIND LOAD

BASIC WIND SPEED V	110 MPH
WIND IMPORTANCE FACTOR IW	1.15
WIND EXPOSURE CATEGORY	C

   SEISMIC LOAD (PER 2005 CONN. BUILDING CODE AND SUPPLEMENT 2009)

SEISMIC DESIGN CATEGORY	D
SHORT PERIOD SPECTRAL ACCELERATION Ss	0.243
1-SECOND PERIOD SPECTRAL ACCELERATION S1	0.062
IMPORTANCE FACTOR I	1.5
SITE CLASS	E
BASIC SEISMIC FORCE RESISTING SYSTEM:	ASCE 7-02
LONGITUDINAL:	ORDINARY CONCENTRICALLY BRACED FRAMES
TRANSVERSE:	ORDINARY CONCENTRICALLY BRACED FRAMES

3. LIVE LOAD REDUCTION SHALL BE IN ACCORDANCE WITH ASCE 7-02.

4. FUTURE EXPANSION LOADS: NO FUTURE EXPANSION.

STRUCTURAL STEEL:

1. ALL STRUCTURAL STEEL WORK SHALL CONFORM TO THE SPECIFICATIONS FOR DESIGN, FABRICATION, AND ERECTION OF STRUCTURAL STEEL USING THE 'MANUAL OF STRUCTURAL STEEL CONSTRUCTION', 13TH EDITION, BY THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION (LRFD).

2. ALL STRUCTURAL STEEL SHALL BE NEW STEEL CONFORMING TO ASTM STANDARD SPECIFICATIONS "STRUCTURAL STEEL" AS AMENDED TO DATE, UNLESS NOTED OTHERWISE ON THE DRAWINGS.

3. STRUCTURAL STEEL SHALL CONFORM TO THE FOLLOWING:

ROLLED SHAPES & PLATES	ASTM A992 OR A588, GR 50
TUBE SECTIONS	ASTM A500 GR B
ANCHOR BOLTS	ASTM F1554, GR 55
HIGH-STRENGTH BOLTS	ASTM A325

4. SHAPES NOTED AS "GALV" SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH ASTM A123. ALL EXPOSED STRUCTURAL AND MISCELLANEOUS STEEL SHALL BE GALVANIZED UNLESS NOTED OTHERWISE. REFER TO RELATED DRAWINGS AND SPECIFICATIONS FOR PAINTING REQUIREMENTS.

5. WELDING SHALL BE IN ACCORDANCE WITH AWS D1.1 CODE FOR WELDING IN BUILDING CONSTRUCTION. WELDING ELECTRODES WILL BE E70XX. WELDERS, TACKERS, AND WELDING OPERATORS MUST BE AWS CERTIFIED WITHIN THE PAST SIX MONTHS.

6. SHOP CONNECTIONS MAY BE BOLTED OR WELDED, UNLESS THE CONNECTION METHOD IS SPECIFICALLY INDICATED ON THE STRUCTURAL DRAWINGS. MAKE SHOP CONNECTIONS, UNLESS WELDED, AND FIELD CONNECTIONS WITH ¾" DIAMETER ASTM A325 HIGH STRENGTH BOLTS, UNLESS SPECIFICALLY INDICATED ON THE STRUCTURAL DRAWINGS WITH HOLES 1/16" LARGER. INSTALL ONE HARDENED WASHER UNDER THE ELEMENT TURNED IN TIGHTENING. IF TC BOLTS ARE USED, THE SLIP CRITICAL BOLT CAPACITY SHALL BE USED IN THE CONNECTION DESIGN. FIELD WELDING OF STRUCTURAL MEMBERS, NOT INDICATED ON THE STRUCTURAL DRAWINGS, IS NOT PERMITTED.

7. UNLESS INDICATED ON THE DRAWINGS, ALL SIMPLY SUPPORTED BEAM-TO-COLUMN AND BEAM-TO-BEAM CONNECTIONS SHALL BE STANDARD AISC DOUBLE ANGLE CONNECTIONS, THE MINIMUM NUMBER OF BOLTS IN ANY CONNECTION OF SECONDARY MEMBERS SHALL BE TWO ¾" DIAMETER A325 BOLTS.

STRUCTURAL STEEL (CONTINUED):

8. ALL BOLTED CONNECTIONS OF ALL MEMBERS OF BRACED FRAMES SHALL BE MADE WITH A325 SLIP CRITICAL BOLTS.

9. ALL BEAM CONNECTIONS SHALL BE DESIGNED FOR THE MAXIMUM UNIFORM LOAD-CARRYING CAPACITY OF THE MEMBER.

10. UNLESS OTHERWISE SHOWN PROVIDE ½" THICK STIFFENER PLATES ON EACH SIDE OF BEAM WHEN COLUMN OCCURS ABOVE OR BELOW BEAMS, ALIGNED WITH COLUMN FLANGES WHERE WEBS ARE PARALLEL AND ALIGNED WITH COLUMN WEB WHERE WEBS ARE PERPENDICULAR.

11. ALL FILLET WELDS SHALL BE A MINIMUM OF 3/16" UNLESS NOTED OTHERWISE.

12. ALL COLUMN ENDS SHALL BE MILLED TO BEAR.

13. STRUCTURAL BEAM OVER COLUMN CONNECTIONS SHALL HAVE A MINIMUM ¾" CAP PLATE WITH 4-3/4" DIAMETER HIGH STRENGTH BOLTS UNO.

14. ALL ANCHOR BOLTS SHALL HAVE TWO HEAVY HEX NUTS AND ONE WASHER UNLESS INDICATED ON THE DRAWINGS. PROVIDE ANCHOR BOLTS, SETTING PLATES, AND EMBEDDED PLATES TO BE SET BY OTHERS. PROVIDE 1/4-INCH THICK LEVELING PLATES FOR USE IN ALIGNING AND SETTING ANCHOR BOLTS AND BASE PLATES.

15. UNLESS NOTED OTHERWISE ALL COLUMNS SHALL HAVE BASE PLATES SET ON ¾" NON-SHRINK GROUT AND 4-3/4" DIAMETER ANCHOR BOLTS EMBEDDED 12" MIN.

16. TOP-OF-STEEL ELEVATIONS INDICATED ON THE DRAWINGS REFER TO TOP OF TOP-BEAM FLANGE.

17. THE CONTRACTOR SHALL PROVIDE ALL EMBEDDED PLATES, SLEEVES, BOX OUTS, CONDUITS, ETCETERA, AS REQUIRED BY OTHER TRADES IN THE CONCRETE STRUCTURE.

18. TEMPORARY CONSTRUCTION BRACING OF THE STRUCTURAL STEEL FRAME SHALL REMAIN IN PLACE UNTIL AFTER THE PERMANENT BRACING SYSTEM HAS BEEN COMPLETED.

19. FIELD WELDING OF STRUCTURAL MEMBERS, NOT INDICATED ON THE STRUCTURAL DRAWINGS, IS NOT PERMITTED.

CAST IN PLACE CONCRETE:

1. PROPORTIONING OF REINFORCED CONCRETE MEMBERS AND THEIR STEEL REINFORCEMENT IS BASED ON AN ULTIMATE STRENGTH DESIGN IN ACCORDANCE WITH BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE (ACI 318-02).

2. MINIMUM 28 DAY COMPRESSIVE STRENGTHS F'c (28-DAYS)

FOUNDATION BEAMS	4,000 psi
SLAB-ON-GRADE	4,000 psi
MEP DUCT BANKS, BLOCKING & ENCASEMENTS	3,000 psi
ALL OTHER CONCRETE	4,000 psi

   ALL CONCRETE SHALL BE CLASSIFIED AS NORMAL WEIGHT, EXCEPT AS NOTED, WITH A UNIT WEIGHT OF 145 PCF.

3. ALL FORMWORK SHALL REMAIN IN PLACE UNTIL CONCRETE HAS ATTAINED 75% OF ITS 28-DAY COMPRESSIVE STRENGTH (SEE SPECIFICATIONS).

4. ALL CONSTRUCTION AND CONTROL JOINT LOCATIONS MUST BE SHOWN ON SHOP DRAWINGS AND APPROVED BY THE ENGINEER.

5. CONSTRUCTION JOINTS NOT SHOWN ON THE DRAWINGS SHALL BE LOCATED SO AS TO LEAST IMPAIR THE STRENGTH OF THE STRUCTURE AND SHOULD GENERALLY BE LOCATED AT POINTS OF MINIMUM SHEAR.

6. ALL EXPOSED EDGES SHALL BE CHAMFERED ¾" UNLESS NOTED OTHERWISE.

7. ALL KEYS SHALL BE 2"x4" WITH BEVELED SIDES, UNLESS NOTED OTHERWISE.

8. NO HORIZONTAL CONSTRUCTION JOINTS SHALL BE MADE IN BEAMS, UNLESS SHOWN SPECIFICALLY ON DRAWINGS. FOR VERTICAL CONSTRUCTION JOINTS, REFER TO ACI 318.

9. ALL REINFORCING WILL BE CONTINUOUS THROUGH CONSTRUCTION JOINTS. REFER TO TYPICAL DETAILS ON S12-007.

10. CAST SLABS AND BEAMS MONOLITHICALLY, UNLESS OTHERWISE INDICATED.

11. NOT ALL OPENINGS THROUGH CONCRETE SLABS ARE SHOWN ON STRUCTURAL DRAWINGS. OPENINGS INDICATED, OR ANY ADDITIONAL OPENINGS OR INSERTS REQUIRED, MUST BE VERIFIED WITH RESPECTIVE TRADES BEFORE POURING OF CONCRETE. NO CONCRETE SHALL BE CAST PRIOR TO THE DESIGNER'S REVIEW AND APPROVAL OF THE COORDINATED SUBMITTAL TO INCLUDE REINFORCING, SLAB OPENINGS AND EMBEDDED ITEMS.

CAST IN PLACE CONCRETE (CONTINUED):

12. USE NONSHRINK, NONMETALLIC GROUT HAVING A MINIMUM COMPRESSIVE STRENGTH OF 8,000 PSI, WHERE INDICATED ON THE PLANS AND IN THE SPECIFICATIONS.

13. PROVIDE SEALANT JOINTS FOR ALL EXPOSED TO VIEW CONSTRUCTION JOINTS, CONTROL JOINTS AND SHEAR KEYS.

14. ALL CONCRETE SHALL BE CONTROLLED CONCRETE, MIXED, AND PLACED UNDER THE SUPERVISION OF AN APPROVED CONCRETE TESTING AGENCY.

15. ALL CONCRETE EXPOSED TO THE WEATHER SHALL CONTAIN AN AIR ENTRAINMENT ADMIXTURE.

CAST IN PLACE CONCRETE REINFORCING:

1. SHOP DRAWINGS AND SCHEDULES OF REINFORCING STEEL SHALL BE PREPARED BY THE CONTRACTOR AND SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO COMMENCEMENT OF THAT PORTION OF THE WORK. ALL ACCESSORIES MUST BE SHOWN ON THE SHOP DRAWINGS.

2. REINFORCING BARS SHALL CONFORM TO ASTM A615 OR A706 GRADE 60 AND SHALL BE EPOXY COATED.

3. THE FOLLOWING MINIMUM CLEAR CONCRETE COVER SHALL BE PROVIDED UNLESS NOTED OTHERWISE ON THE DRAWINGS:

CONCRETE CAST AGAINST EARTH	
ALL BAR SIZES	3"
CONCRETE EXPOSED TO EARTH OR WEATHER	
ALL BARS	2"

4. UNLESS NOTED OTHERWISE, BARS SHALL BE CONTINUOUS AND SHALL RUN CONTINUOUSLY AROUND CORNERS. BARS SHALL HAVE STANDARD HOOKS AT DISCONTINUOUS ENDS.

5. SPLICES SHALL GENERALLY OCCUR AT MID-SPAN FOR TOP AND MIDDLE BARS AND AT SUPPORT FOR BOTTOM BARS AND SHALL BE STAGGERED. PROVIDE CLASS B SPLICES FOR ALL CONTINUOUS REINFORCEMENT, UNLESS OTHERWISE NOTED.

6. BARS SHALL NOT BE CUT OR OMITTED FOR SLEEVE OR DUCT OPENINGS IN FLOORS. BARS MAY BE MOVED LATERALLY WITHOUT CHANGING THE DISTANCE FROM THE FACE OF CONCRETE. BEND NO BARS IN FIELD WITHOUT APPROVAL OF THE ENGINEER.

7. ALL REINFORCING SHALL BE DETAILED IN ACCORDANCE WITH ACI 315 MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES. PROVIDE BAR SUPPORTS, SPACERS, AND ACCESSORIES RECOMMENDED IN THE ACI DETAILING MANUAL, PUBLICATION SP-66. ALL REINFORCEMENT DETAILING, LAP SPLICES, AND EMBEDMENTS SHALL CONFORM TO THIS MANUAL. ALL ACCESSORIES, SUCH AS SLAB BOLSTERS AND BEAM AND SLAB CHAIRS IN CONTACT WITH EXPOSED SURFACES SHALL BE PLASTIC-COATED.

8. SET AND TIE ALL REINFORCEMENT BEFORE PLACING CONCRETE. SETTING DOWELS AND REINFORCEMENT INTO WET CONCRETE IS PROHIBITED.

9. MINIMUM ANCHORAGE, SPLICE REQUIREMENTS FOR REINFORCING BARS, AND TEMPERATURE REINFORCEMENT IN ALL CONCRETE SLABS SHALL BE ACCORDING TO ACI 318, UNLESS OTHERWISE SHOWN ON DRAWINGS.

10. NO CONCRETE SHALL BE CAST BEFORE REVIEW AND APPROVAL OF THE REINFORCING AND EMBEDDED ITEMS HAVE BEEN OBTAINED FROM THE ENGINEER.

11. ANY ADDITIONAL DRILLING OR CORING SHALL NOT DAMAGE REINFORCING BARS.

12. SET ANCHOR BOLTS AND EMBEDDED PLATES REQUIRED FOR CONNECTION OF WORK BY OTHERS.

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DESIGNER/DRAFTER: RC/JLW

CHECKED BY: MH

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

Filename: 16_B12SN_3010088_S12-001.dgn

SIGNATURE/BLOCK: STATE OF CONNECTICUT — LICENSED PROFESSIONAL ENGINEER

PARSONS BRINCKERHOFF
GLASTONBURY, CT

PROJECT TITLE:
NEW HAVEN RAIL YARD
FACILITIES IMPROVEMENTS
YARD POWER UPGRADE

TOWN: NEW HAVEN

DRAWING TITLE:
STRUCTURAL
GENERAL NOTES

PROJECT NO. 301-0144

DRAWING NO. S12-001

SHEET NO. 08.02

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FOUNDATIONS:

1. FOUNDATION DESIGN IS BASED UPON SOIL EXPLORATION AND REPORT ENTITLED, NEW HAVEN RAIL YARD FACILITIES IMPROVEMENT PROJECT (STATE PROJECT NO. 301-0144) YARD POWER UPGRADE, SOIL AND ROCK REPORT, SEPTEMBER 2014.

2. PILE SPECIFICATION: 16" SQ PRECAST PRESTRESSED CONCRETE PILES

3. PILE DESIGN CAPACITY IS 50 TONS COMPRESSION.

4. ALL BACKFILL UNDER STRUCTURAL SLABS, MATS, AND OTHER FOUNDATION ELEMENTS SHALL BE COMPACTED IN SPECIFIED LIFTS TO 95 PERCENT OF MAXIMUM DRY DENSITY, UNLESS OTHERWISE INDICATED OR SPECIFIED. FOUNDATION ELEMENTS SHALL REST ONLY ON SUITABLE UNDISTURBED OR COMPACTED STRUCTURAL FILL. REFER TO SPECIFICATIONS FOR FILL REQUIREMENTS.

5. PROVIDE 12" MINIMUM NO 6 CRUSHED STONE UNDER CONCRETE SLAB AND GRADE BEAM AREAS, SEE S12-005 DETAIL D.

6. PROVIDE SHEETING, BRACING AND UNDERPINNING TO PROTECT ADJACENT UTILITY STRUCTURES, AS REQUIRED.

7. OPEN EXCAVATIONS AROUND BUILDING PERIMETER MUST REMAIN DRY. REMOVE WATER FROM OPEN EXCAVATIONS PRIOR TO BACKFILLING.

8. SHORING AND BRACING FOR THE LATERAL SUPPORT OF EXCAVATION SHALL REMAIN IN PLACE UNTIL ALL PERMANENT STRUCTURAL SYSTEMS ARE COMPLETE AS APPROVED BY THE ENGINEER.

9. CONTRACTOR SHALL PROVIDE TEMPORARY BRACING FOR ALL FOUNDATION GRADE BEAMS DURING THE OPERATIONS OF BACKFILLING AND COMPACTION.

10. PROVIDE PVC WATERSTOPS IN ALL CONSTRUCTION AND EXPANSION JOINTS WHERE INDICATED ON THE DRAWINGS.

11. ALL REQUIRED INSERTS SLEEVES, CONDUITS, EMBEDMENTS AND PENETRATIONS MUST BE VERIFIED WITH RESPECTIVE TRADES BEFORE CASTING CONCRETE.

12. COORDINATE UNDER SLAB DRAIN REQUIREMENTS WITH MECHANICAL DRAWINGS.

13. NO FOUNDATION ELEMENT, BEAM OR SLABS SHALL BE PLACED ON FROZEN SOIL OR IN WATER.

14. OLD FOUNDATIONS OR OTHER OBSTRUCTIONS MAY BE ENCOUNTERED DURING EXCAVATION AND PILE DRIVING WORK. SUCH FOUNDATIONS AND OBSTRUCTIONS SHALL BE REMOVED TO A MINIMUM OF 2' BELOW BASE OF FLOOR SLAB OR AS DIRECTED BY THE ENGINEER.

15. THE OWNER AND ENGINEER ASSUME NO RESPONSIBILITY FOR THE VALIDITY OF THE SUBSURFACE CONDITIONS DESCRIBED ON THE DRAWINGS, SPECIFICATIONS, BORING LOGS, OR TEST PITS. THE DATA IS INCLUDED ONLY TO ASSIST THE CONTRACTOR DURING BIDDING AND SUBSEQUENT CONSTRUCTION AND REPRESENT CONDITIONS ONLY OF THESE SPECIFIED LOCATIONS AT THE PARTICULAR TIME THEY WERE MADE.

16. LOCALIZED DEWATERING MAY BE NECESSARY UNTIL FOUNDATIONS ARE PLACED.

GENERAL CONSTRUCTION NOTES:

1. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS AT THE SITE AND REPORT ANY DISCREPANCIES TO THE ENGINEER FOR CLARIFICATION BEFORE PROCEEDING WITH THE AFFECTED PART OF WORK.

2. SHORE, SHEET AND BRACE EXCAVATIONS AS REQUIRED TO ASSURE COMPLETE SAFETY AGAINST COLLAPSE OF EARTH AND DAMAGE TO ADJACENT PROPERTY INCLUDING BUT NOT LIMITED TO EXISTING STREETS, BUILDING AND UTILITY LINES.

3. THE CONTRACTOR SHALL BE COMPLETELY RESPONSIBLE FOR THE SAFETY OF ADJACENT STRUCTURES, PROPERTY, AND THE PUBLIC. IN AREAS OF PUBLIC ACCESS, THE PUBLIC WAY SHALL BE PROTECTED FROM CONSTRUCTION AND DEMOLITION WORK AT ALL TIMES.

4. COORDINATE THE STRUCTURAL INFORMATION SHOWN ON THESE DRAWINGS WITH OTHER INTERFACING TRADES (CIVIL, UTILITIES AND TRACTION POWER) PRIOR TO SUBMITTAL OF SHOP DRAWINGS AND CONSTRUCTION.

5. WORK NOT INDICATED ON A PART OF THE DRAWINGS, BUT REASONABLY IMPLIED TO BE SIMILAR TO THAT SHOWN AT CORRESPONDING LOCATIONS, SHALL BE INCLUDED. DETAILS SHOWN AS TYPICAL ARE APPLICABLE TO ALL SIMILAR CONDITIONS.

6. DEMOLITION WORK SHALL BE DONE WITH CAUTION. PROVIDE ALL SHORING AND ENCLOSURES NECESSARY PRIOR TO COMMENCEMENT OF WORK.

7. ALL CONSTRUCTION SHALL BE MADE FROM APPROVED SHOP DRAWINGS.

8. DO NOT SCALE CONTRACT DRAWINGS FOR THE PURPOSE OF ESTABLISHING DIMENSIONS.

9. STRUCTURAL DRAWINGS SHALL BE USED IN CONJUNCTION WITH SHOP DRAWINGS, PROJECT SPECIFICATIONS, CIVIL, UTILITY, TRACTION POWER, AND OTHER DRAWINGS. CONSULT THESE DRAWINGS FOR LOCATIONS AND DIMENSIONS OF OPENINGS, CHASES, INSERTS, REGLETS, SLEEVES, DEPRESSIONS, AND OTHER DETAILS NOT SHOWN ON THE STRUCTURAL DRAWINGS.

ABBREVIATIONS AND LEGEND:

B.F.	=	BRACED FRAME
BOT	=	BOTTOM
BRG	=	BEARING
CIP	=	CAST-IN-PLACE CONCRETE
℄	=	CENTER LINE
CD	=	COLUMN DOWN
CLR	=	CLEAR
COL	=	COLUMN
CONC	=	CONCRETE
CONN	=	CONNECTION
CONT	=	CONTINUOUS
DIA	=	DIAMETER
DWG	=	DRAWING
EJ	=	EXPANSION JOINT
EL	=	ELEVATION
EOS	=	EDGE OF SLAB
EQ	=	EQUAL
EQUIP	=	EQUIPMENT
ES	=	EACH SIDE
FB	=	FOUNDATION BEAM
F'c	=	CONCRETE 28 DAY COMPRESSIVE STRENGTH
FIN	=	FINISH
FNDN	=	FOUNDATION
FRP	=	FIBERGLASS REINFORCED PLASTIC
GA	=	GAUGE
GALV	=	GALVANIZED
LG	=	LONG
LLV	=	LONG LEG VERTICAL
MAX	=	MAXIMUM
MECH	=	MECHANICAL
MIN	=	MINIMUM
NS	=	NON-SHRINK
NTS	=	NOT TO SCALE
OC	=	ON CENTER
PL	=	PLATE
PSF	=	POUNDS PER SQUARE FOOT
PSI	=	POUNDS PER SQUARE INCH
REINF	=	REINFORCING
SIM	=	SIMILAR
SOG	=	SLAB ON GRADE
SPS	=	SPACES
SS	=	STAINLESS STEEL
STD	=	STANDARD
T&B	=	TOP AND BOTTOM
T/	=	TOP OF
TOC	=	TOP OF CONCRETE
TOFF	=	TOP OF FINISHED FLOOR
TOS, T.O.S.	=	TOP OF STEEL
TYP	=	TYPICAL
UNO, U.N.O.	=	UNLESS NOTED OTHERWISE
WP,W.P.	=	WORK POINT
WS	=	WATER STOP
⟷	=	INDICATES DIRECTION OF SPAN

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STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

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SIGNATURE/BLOCK

STATE OF CONNECTICUT · DEPARTMENT OF TRANSPORTATION · LICENSED PROFESSIONAL ENGINEER

PARSONS BRINCKERHOFF
GLASTONBURY, CT

PROJECT TITLE:
NEW HAVEN RAIL YARD FACILITIES IMPROVEMENTS
YARD POWER UPGRADE

TOWN: NEW HAVEN

DRAWING TITLE:
STRUCTURAL GENERAL NOTES

PROJECT NO. 301-0144

DRAWING NO. S12-002

SHEET NO. 08.03

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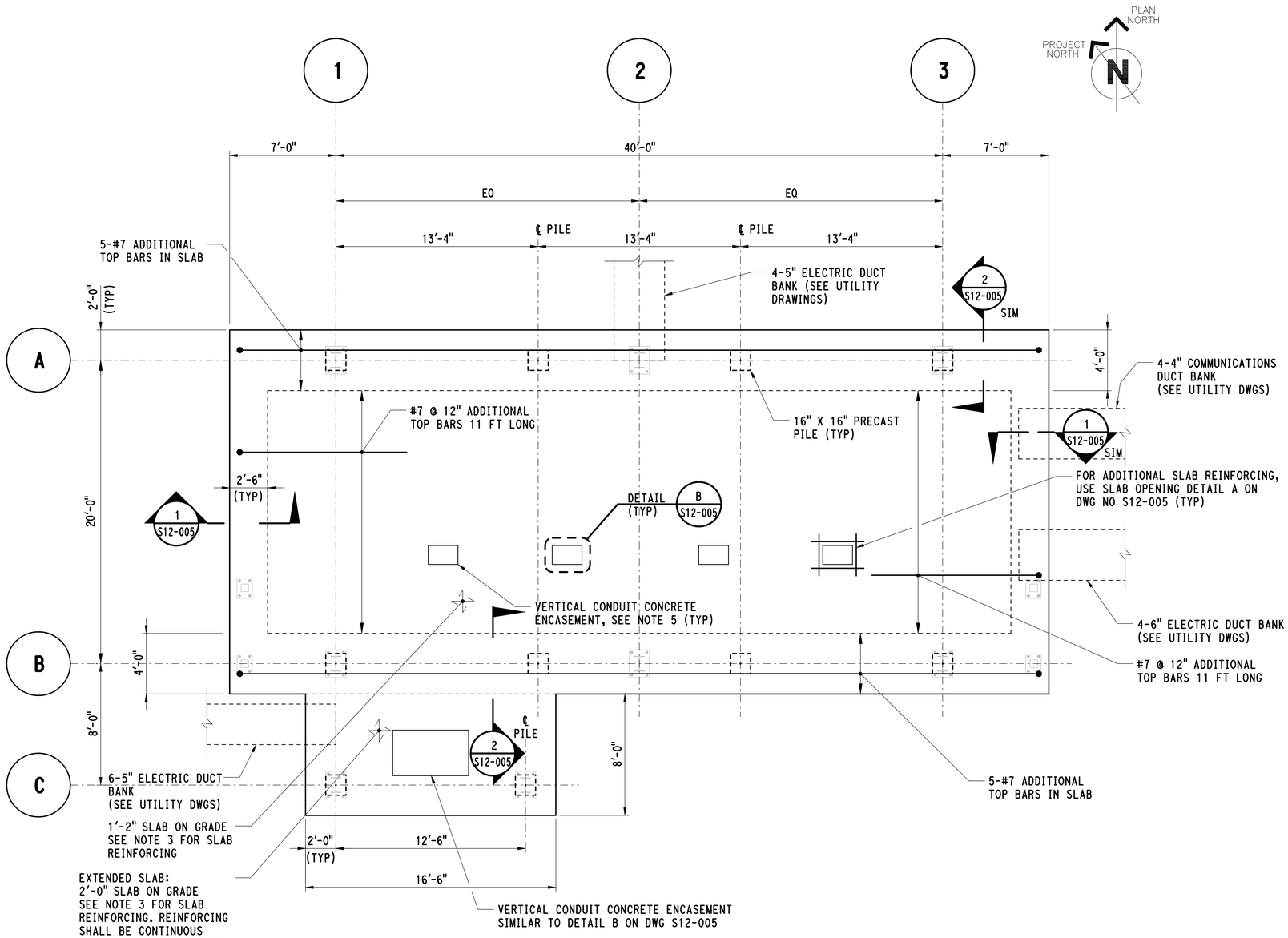

SWITCHGEAR FOUNDATION REINFORCING SLAB PLAN

SCALE: 1/4" = 1'-0" TOC EL 7'-0"

NOTES:

1. FOR GENERAL NOTES, SEE DWG S12-001 AND S12-002.
2. FOR SECTIONS AND TYPICAL DETAILS, WORK THIS DRAWING WITH DRAWING NOS S12-005 THRU S12-007.
3. SLAB ON GRADE REINFORCEMENT (TYP U.N.O.):

   TOP REINFORCEMENT: #7 @ 12" EACH WAY
   BOTTOM REINFORCEMENT: #7 @ 12" EACH WAY
4. ALL REINFORCEMENT SHOWN ON THE FOUNDATION SLAB PLAN IS IN ADDITION TO THE TYPICAL SLAB REINFORCEMENT AS INDICATED IN NOTE 3. ALL ADDITIONAL BARS ARE TO BE SPACED EQUALLY BETWEEN TYPICAL SLAB REINFORCEMENT. REFER TO SECTIONS 1 AND 2 ON DWG NO S12-005 FOR REINFORCEMENT OF THE FOUNDATION BEAMS. ALL BARS SHALL BE HOOKED AT DISCONTINUOUS ENDS.
5. REFER TO UTILITY AND SITE SECURITY DRAWINGS FOR DUCT BANK CONDUIT SIZE AND PENETRATION LOCATIONS THROUGH THE FOUNDATION SLAB. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO COORDINATE ALL CONDUIT PENETRATION LOCATIONS. REFER TO TYPICAL CONCRETE DETAILS FOR REINFORCEMENT OF OPENINGS IN SLABS.
6. ONE TEST PILE REQUIRED. CONTRACTOR TO SELECT TEST PILE AS THE FIRST PILE TO BE DRIVEN, SEE DWG S12-010 FOR PILE DETAILS.

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Plotted Date: 11/5/2014

DESIGNER/DRAFTER: RC/ JLW
CHECKED BY: MH
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SCALE 1/4"=1'-0"

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

Filename: 16_B12SP_3010088_S12-003.dgn

SIGNATURE BLOCK: STATE OF CONNECTICUT, ANTHONY A. NICHOLLS, LICENSED PROFESSIONAL ENGINEER

PARSONS BRINCKERHOFF
GLASTONBURY, CT

PROJECT TITLE:
NEW HAVEN RAIL YARD
FACILITIES IMPROVEMENTS
YARD POWER UPGRADE

TOWN: NEW HAVEN

DRAWING TITLE:
STRUCTURAL
SWITCHGEAR FOUNDATION PLAN

PROJECT NO. 301-0144
DRAWING NO. S12-003
SHEET NO. 08.04

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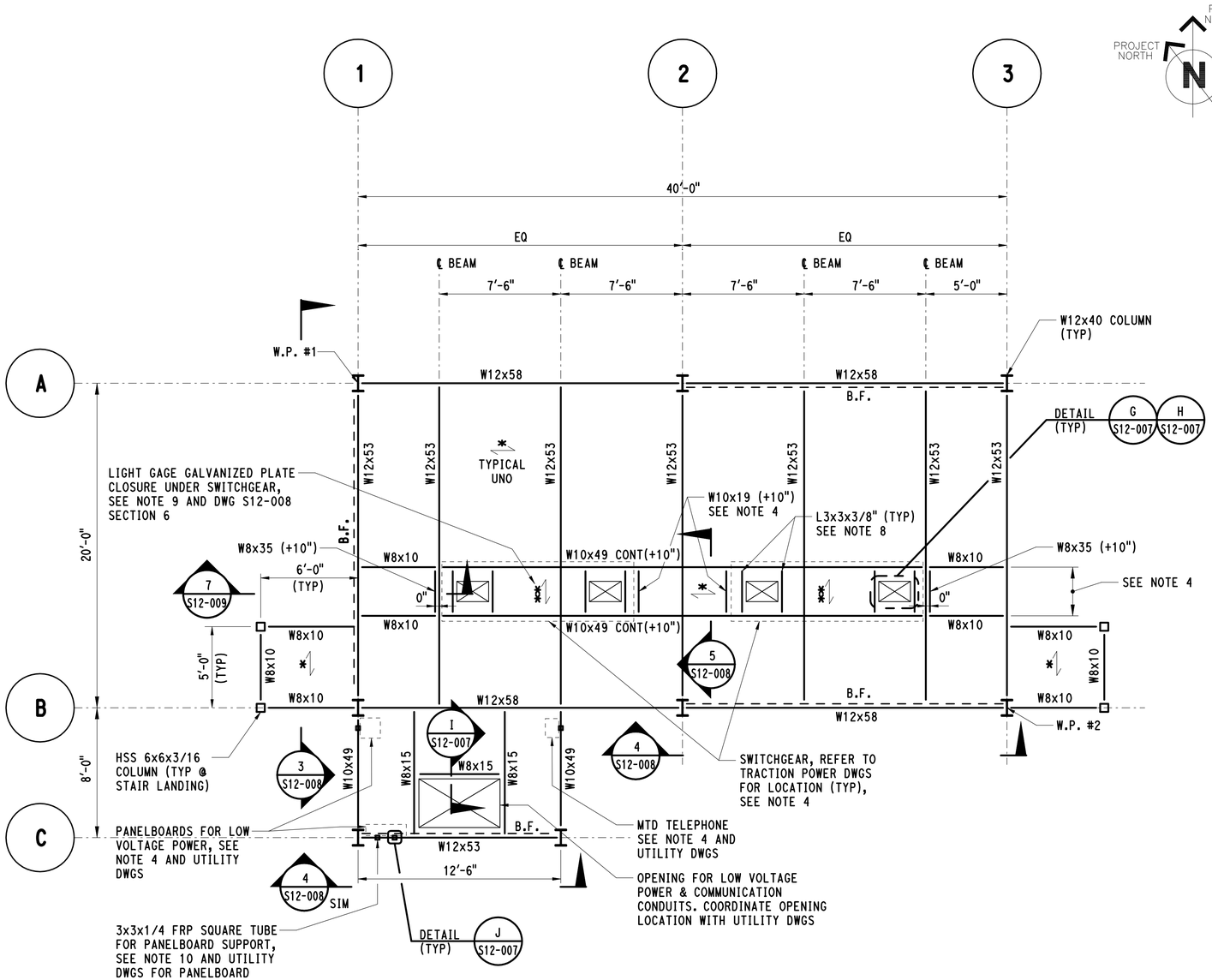

SWITCHGEAR SUPPORT FRAMING PLAN

SCALE: 1/4" = 1'-0" TOS EL 16'-0" UNO BY (+/-)

GEOMETRIC CONTROL TABLE			
COLUMN LOCATION	WORK POINT NO.	NORTHING	EASTING
A/1	1	670373.62	952569.98
B/3	2	670333.35	952589.44

NOTES:

1. FOR GENERAL NOTES, SEE DWG S12-001 AND S12-002.
2. FOR SECTIONS AND TYPICAL DETAILS, WORK THIS DRAWING WITH DRAWING NOS S12-007 THRU S12-009.
3. * INDICATES PULTRUDED FIBERGLASS GRATING. USE DURAGRID HD-4000 2.5" BEARING FROM STRONGWELL OR APPROVED EQUIVALENT.
4. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO COORDINATE THE SWITCHGEAR AND CABINET LOCATIONS WITH SUPPORT BEAMS SHOWN. LOCATE W BEAMS TO PROVIDE CURB ATTACHMENT TO PLATFORM STRUCTURE. CONTRACTOR TO COORDINATE WITH TRACTION POWER, UTILITY AND SITE SECURITY DRAWINGS FOR EXACT LOCATION. COORDINATE ANCHOR ATTACHMENTS WITH STRUCTURAL STEEL AND MANUFACTURER CURB REQUIREMENTS TO RESIST LOADING DUE TO WIND OR SEISMIC.
5. STRUCTURAL STEEL STAIR LANDINGS AND FRP GRATING FOR RAISED PLATFORM ARE SHOWN. FRP STAIRS ARE NOT SHOWN. CONTRACTOR TO PROVIDE FRP STAIRS AND SUBMIT COMPLETE SHOP DRAWINGS, WITH CALCULATIONS, FOR FINAL REVIEW AND APPROVAL. REFER TO "SWITCHGEAR" SPECIFICATION.
6. SEE DETAIL Q ON DWG NO S12-009 FOR GUARDRAIL DETAIL.
7. ALL STRUCTURAL STEEL INCLUDING ANCHOR BOLTS SHALL BE GALVANIZED AND PAINTED. ALL OTHER BOLTS, WASHERS AND NUTS SHALL BE STAINLESS STEEL (TYPE 316L). REFER TO SPECIFICATIONS FOR ALL PAINT REQUIREMENTS.
8. SEE DETAIL G AND H ON DWG NO S12-007 FOR VERTICAL CONCRETE CONDUIT ENCASEMENT SUPPORT AT PLATFORM LEVEL.
9. ** INDICATES GALVANIZED LIGHT GAGE (12 GA MIN.) CLOSURE PLATE AT UNDERSIDE OF SWITCHGEAR. PLATES SHALL BE FASTENED WITH MIN. #8 TEK SCREWS @ 12" O.C. TO TOP OF BOTTOM FLANGE OF W10 SWITCHGEAR SUPPORT STEEL. PLATE SHALL BEAR A MINIMUM OF 3" ON FLANGE AND SHALL BE CUT IN FIELD TO ACCOMMODATE CONCRETE ENCASEMENTS FOR CONDUITS INTO SWITCHGEAR BAYS. PROVIDE CLOSURE PIECES AT CONCRETE ENCASEMENT LOCATIONS WITH LIGHT GAGE ANGLES FASTENED TO CONCRETE. COORDINATE EXACT LOCATION OF BLOCKOUTS WITH TRACTION POWER DRAWINGS AND SWITCHGEAR REQUIREMENTS.
10. PANELBOARD SUPPORT SHALL BE PER MANUFACTURER'S REQUIREMENTS USING UNISTRUT SYSTEM OR APPROVED EQUIVALENT. ATTACHMENT OF PANELBOARD SUPPORT TO FRP POST IS THE RESPONSIBILITY OF THE CONTRACTOR. SUBMIT ATTACHMENT DETAILS FOR REVIEW AND APPROVAL PRIOR TO FABRICATION OF FRP POSTS.

REV.	DATE	REVISION DESCRIPTION	SHEET NO.

THE INFORMATION, INCLUDING ESTIMATED QUANTITIES OF WORK, SHOWN ON THESE SHEETS IS BASED ON LIMITED INVESTIGATIONS BY THE STATE AND IS IN NO WAY WARRANTED TO INDICATE THE CONDITIONS OF ACTUAL QUANTITIES OF WORK WHICH WILL BE REQUIRED.

Plotted Date: 11/7/2014

DESIGNER/DRAFTER: RC/ JLW
CHECKED BY: MH
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SCALE 1/4"=1'-0"

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

Filename: 16_B12SP_3010088_S12-004.dgn

SIGNATURE BLOCK
PARSONS BRINCKERHOFF
GLASTONBURY, CT

PROJECT TITLE:
NEW HAVEN RAIL YARD FACILITIES IMPROVEMENTS
YARD POWER UPGRADE

TOWN: NEW HAVEN

DRAWING TITLE:
STRUCTURAL SWITCHGEAR FRAMING PLAN

PROJECT NO. 301-0144
DRAWING NO. S12-004
SHEET NO. 08.05

11/7/2014 4:21:59 PM
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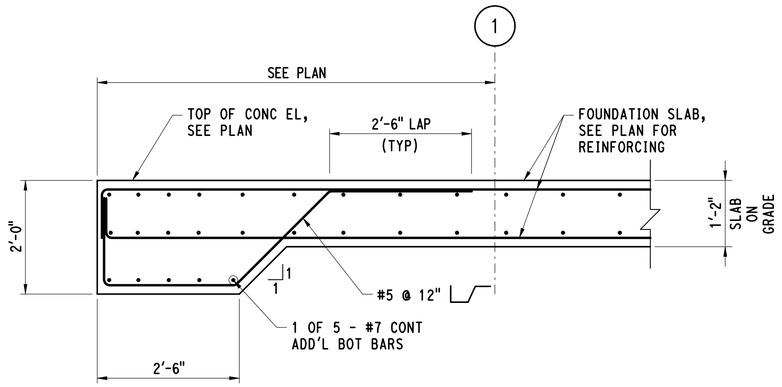

FOUNDATION BEAM AT STAIR LANDING (1 / S12-003)

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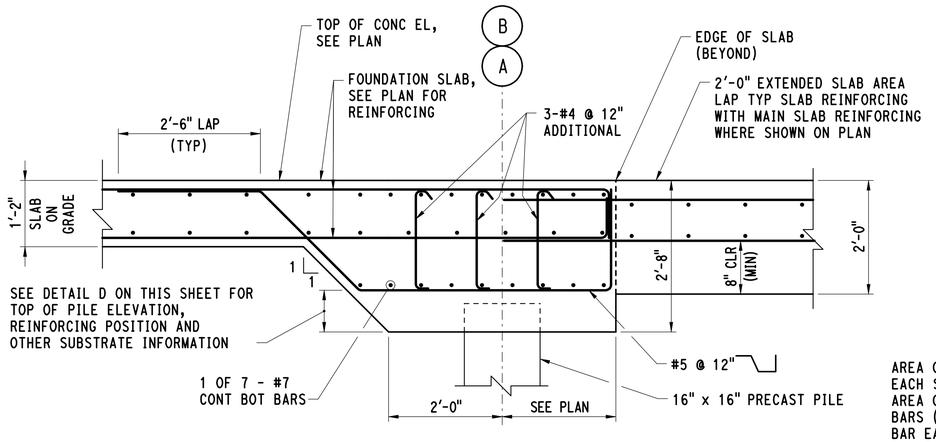

FOUNDATION BEAM AT EXTERIOR CONDITIONS (2 / S12-003)

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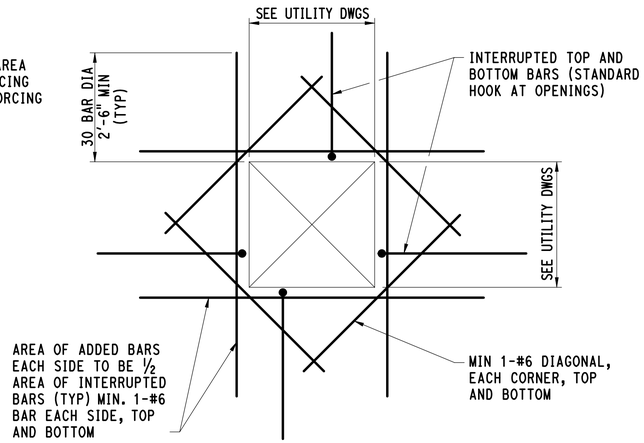
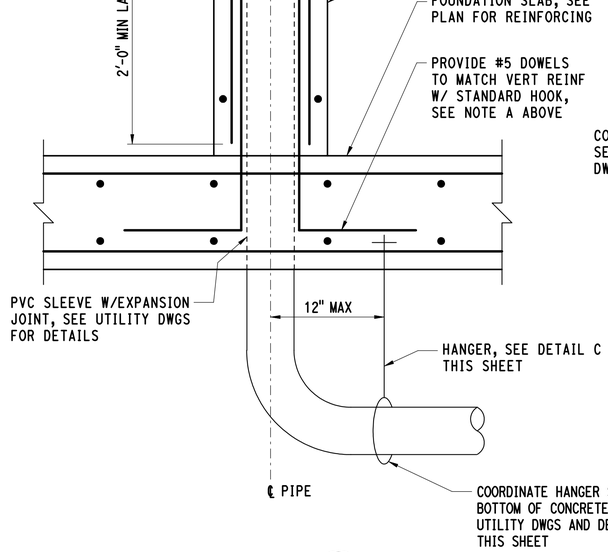


NOTE:

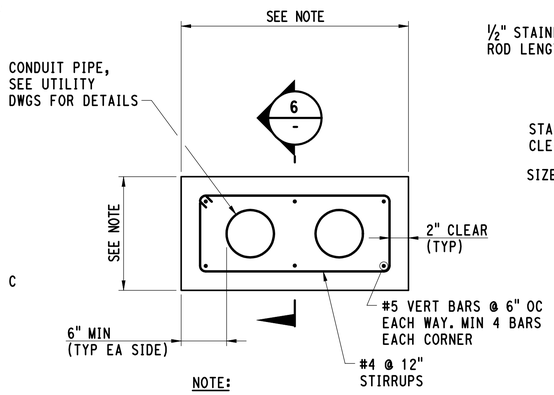
TWO OR MORE PIPE PENETRATIONS SPACED A MINIMUM 6" CLEAR SHALL BE CONSIDERED AN OPENING, REINFORCE AS REQUIRED BY TYPICAL DETAIL. FINAL APPROVAL OF REQUIRED REINFORCEMENT AROUND ALL OPENINGS AND PENETRATIONS SHALL BE PENDING STRUCTURAL ENGINEER'S REVIEW OF COORDINATED PENETRATION PLAN.

OPENING IN REINFORCED CONCRETE SLAB (A / S12-003)

NOT TO SCALE



SECTION (6 / -)



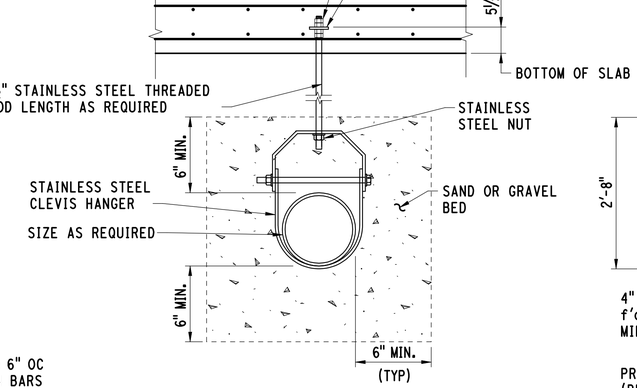
NOTE:

CONTRACTOR TO COORDINATE CONCRETE ENCASEMENT WITH SIZES AND LOCATION OF CONDUITS. SEE DETAIL G ON DWG NO S12-007 FOR MORE INFO.

PLAN

TYPICAL VERTICAL CONDUIT CONCRETE ENCASEMENT (B / S12-003)

SCALE: 1 1/2" = 1'-0"

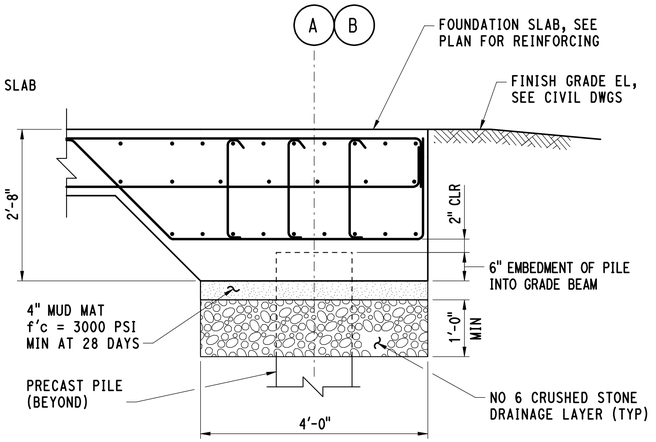


NOTES:

1. CLEVIS HANGERS SHALL BE PLACED AT 8'-0" OC MAX SPACING AND AT PENETRATIONS. TIE THREADED ROD TO REBAR.
2. THIS DETAIL APPLIES TO ALL UNDER SLAB CONDUITS.

UNDER SLAB SINGLE CONDUIT/PIPE SUPPORT (C / -)

NOT TO SCALE



NOTE: AT EAST AND WEST ENDS, PROVIDE MUD MAT AND CRUSHED STONE DRAINAGE LAYER 2'-6" FROM THE EDGE OF THE SLAB. AT THE SOUTH PLATFORM EXTENSION SLAB, PROVIDE MUD MAT AND CRUSHED STONE LAYER TO UNDERSIDE OF 2'-0" SLAB.

UNDER SLAB MUD DETAIL (D / -)

SCALE: 3/4" = 1'-0"

REV.	DATE	REVISION DESCRIPTION	SHEET NO.

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Plotted Date: 11/7/2014

DESIGNER/DRAFTER: RC/JLW
CHECKED BY: MH
SCALE AS NOTED

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

Filename: 16_B12SN_3010088_S12-005.dgn

SIGNATURE BLOCK: STATE OF CONNECTICUT ANDREW A. NOTT LICENSED PROFESSIONAL ENGINEER

PARSONS BRINCKERHOFF
GLASTONBURY, CT

PROJECT TITLE:
NEW HAVEN RAIL YARD FACILITIES IMPROVEMENTS
YARD POWER UPGRADE

TOWN: NEW HAVEN

DRAWING TITLE:
STRUCTURAL
TYPICAL CONCRETE DETAILS-1

PROJECT NO. 301-0144
DRAWING NO. S12-005
SHEET NO. 08.06

11/7/2014 4:23:09 PM
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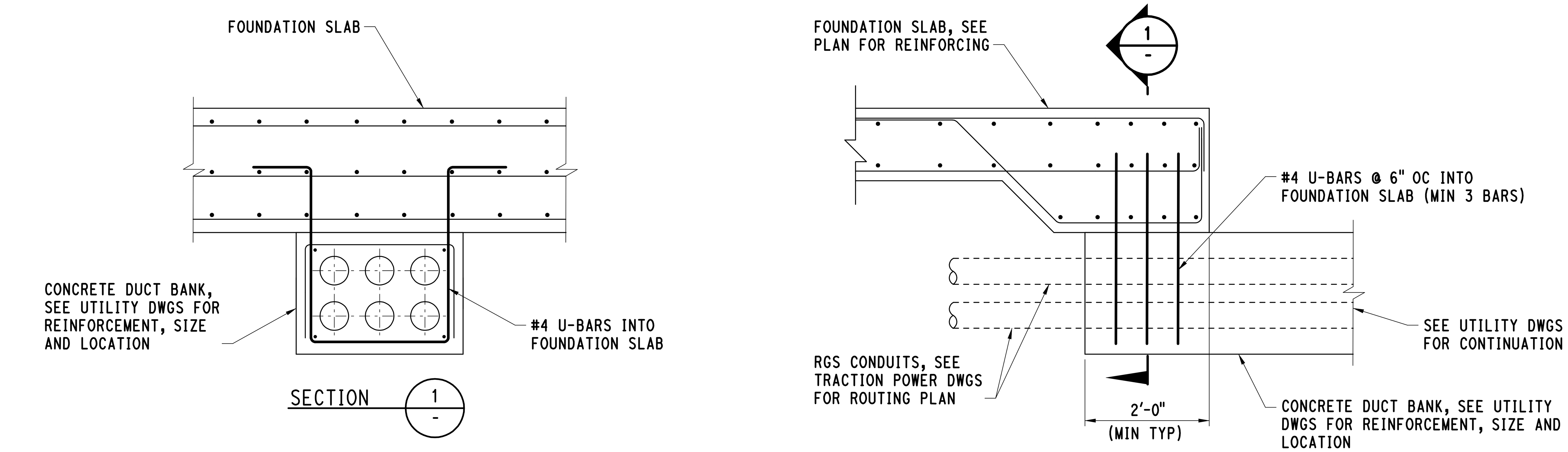
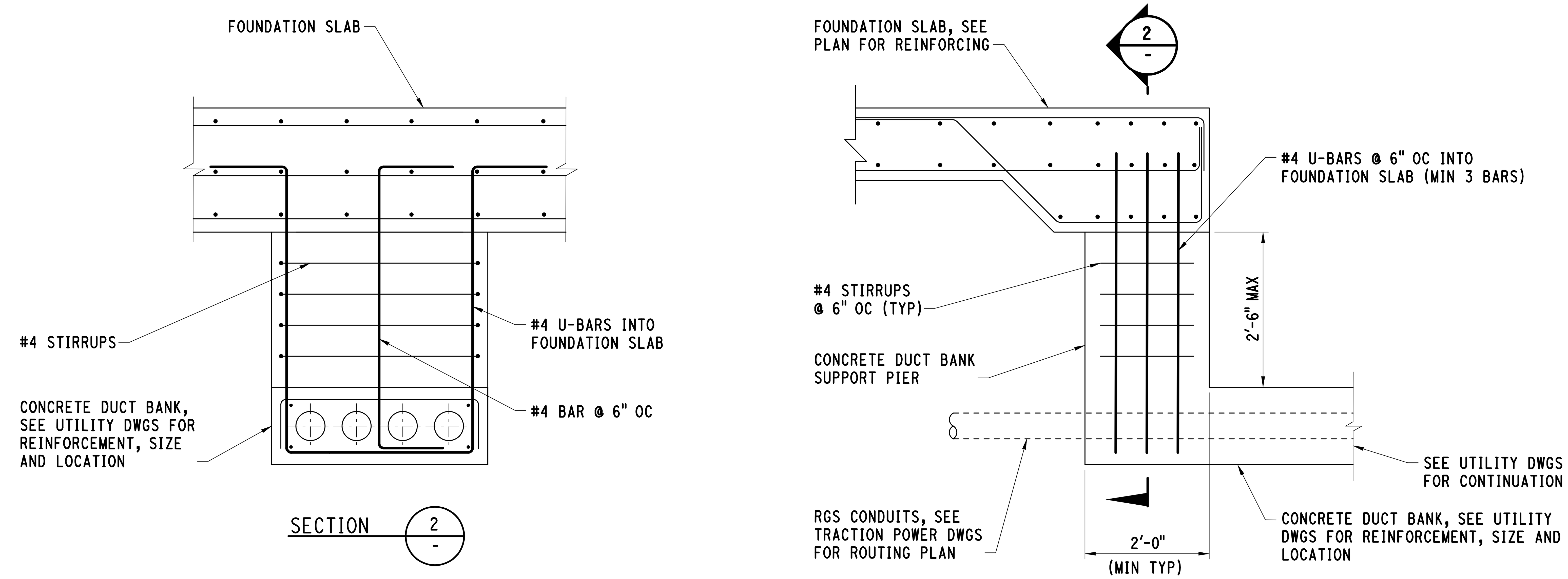


TYPICAL DUCT BANK SUPPORT AT FOUNDATION SLAB DETAIL - UNDERSLAB CONDITION

SCALE: 3/4" =1'-0"



TYPICAL DUCT BANK SUPPORT AT FOUNDATION SLAB DETAIL - HUNG CONDITION

SCALE: 3/4" =1'-0"

REV.	DATE	REVISION DESCRIPTION	SHEET NO.

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Plotted Date: 11/10/2014

DESIGNER/DRAFTER: RC/JLW
CHECKED BY: MH
SCALE AS NOTED

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

Filename: 16_B12SN_3010088_S12-006.dgn

SIGNATURE/BLOCK: STATE OF CONNECTICUT ANTHONY A. MORETTI No. 15858 LICENSED PROFESSIONAL ENGINEER

PARSONS BRINCKERHOFF
GLASTONBURY, CT

PROJECT TITLE:
NEW HAVEN RAIL YARD FACILITIES IMPROVEMENTS YARD POWER UPGRADE

TOWN: **NEW HAVEN**

DRAWING TITLE: **STRUCTURAL TYPICAL CONCRETE DETAILS-2**

PROJECT NO. 301-0144
DRAWING NO. S12-006
SHEET NO. 08.07

11/10/2014 7:43:32 AM
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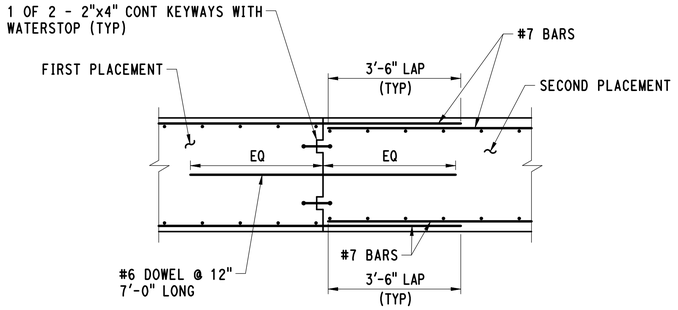
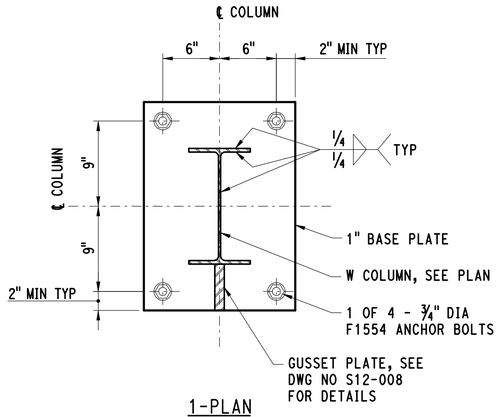
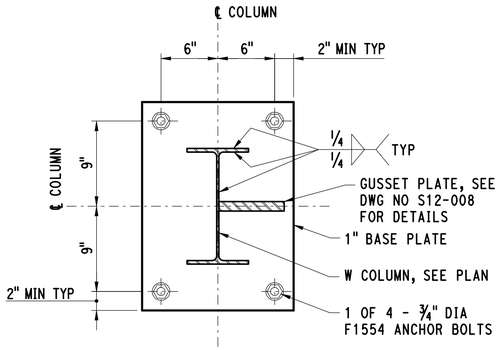


SLAB/BEAM CONSTRUCTION JOINT DETAIL — E

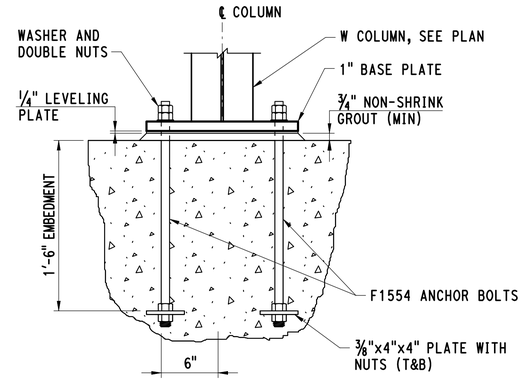
SCALE: 1/2" = 1'-0"



1-PLAN



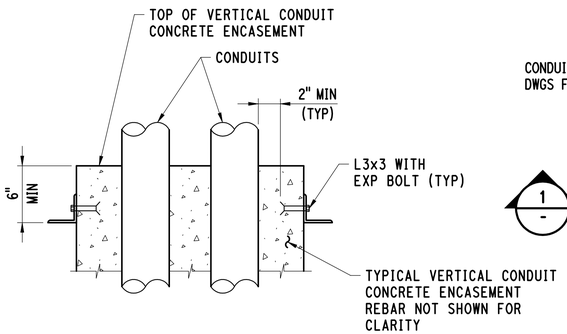
2-PLAN



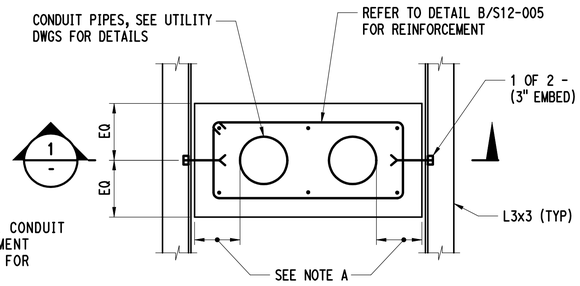
SECTION

BASE PLATE DETAILS — F

SCALE: 1 1/2" = 1'-0"



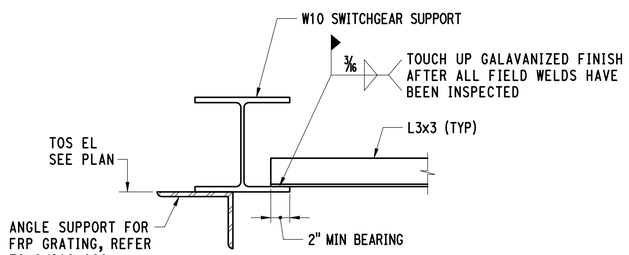
SECTION 1/-



NOTE A:
POSITION CONDUITS AND SIZE ENCASEMENT SUCH THAT THE EXPANSION BOLTS SHALL BE 2" CLEAR OF THE CONDUITS

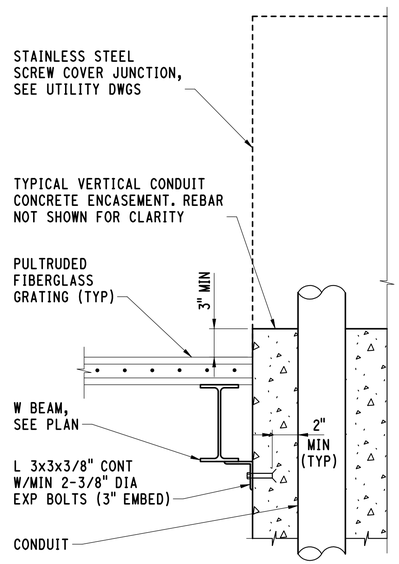
TYPICAL VERTICAL CONDUIT CONNECTION TO STEEL FRAMING — G / S12-004

SCALE: 1 1/2" = 1'-0"



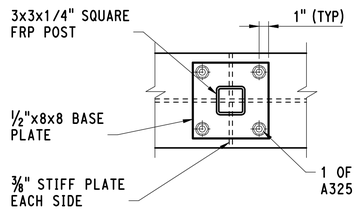
TYPICAL ANGLE TO BEAM CONNECTION — H / S12-004

SCALE: 1 1/2" = 1'-0"



VERTICAL CONDUIT CONCRETE ENCASEMENT CONN TO W-BEAM — I / S12-004

SCALE: 1 1/2" = 1'-0"



NOTE:

POST ATTACHMENT TO BASE PLATE SHALL BE BY FRP MANUFACTURER FOR AN UNFACTORED OVERTURNING MOMENT DUE TO WIND OF 0.75 K-FT

TYPICAL FRP POST DETAIL FOR PANELBOARD SUPPORT — J / S12-004

SCALE: 1 1/2" = 1'-0"

REV.	DATE	REVISION DESCRIPTION	SHEET NO.

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Plotted Date: 11/7/2014

DESIGNER/DRAFTER: RC/JLW
CHECKED BY: MH
SCALE AS NOTED

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

Filename: 16_B12SN_3010088_S12-007.dgn

SIGNATURE BLOCK — STATE OF CONNECTICUT, DEPARTMENT OF TRANSPORTATION, LICENSED PROFESSIONAL ENGINEER

PARSONS BRINCKERHOFF
GLASTONBURY, CT

PROJECT TITLE:
NEW HAVEN RAIL YARD FACILITIES IMPROVEMENTS
YARD POWER UPGRADE

TOWN: NEW HAVEN

DRAWING TITLE:
STRUCTURAL SECTIONS AND DETAILS-1

PROJECT NO. 301-0144
DRAWING NO. S12-007
SHEET NO. 08.08

11/7/2014 4:24:52 PM
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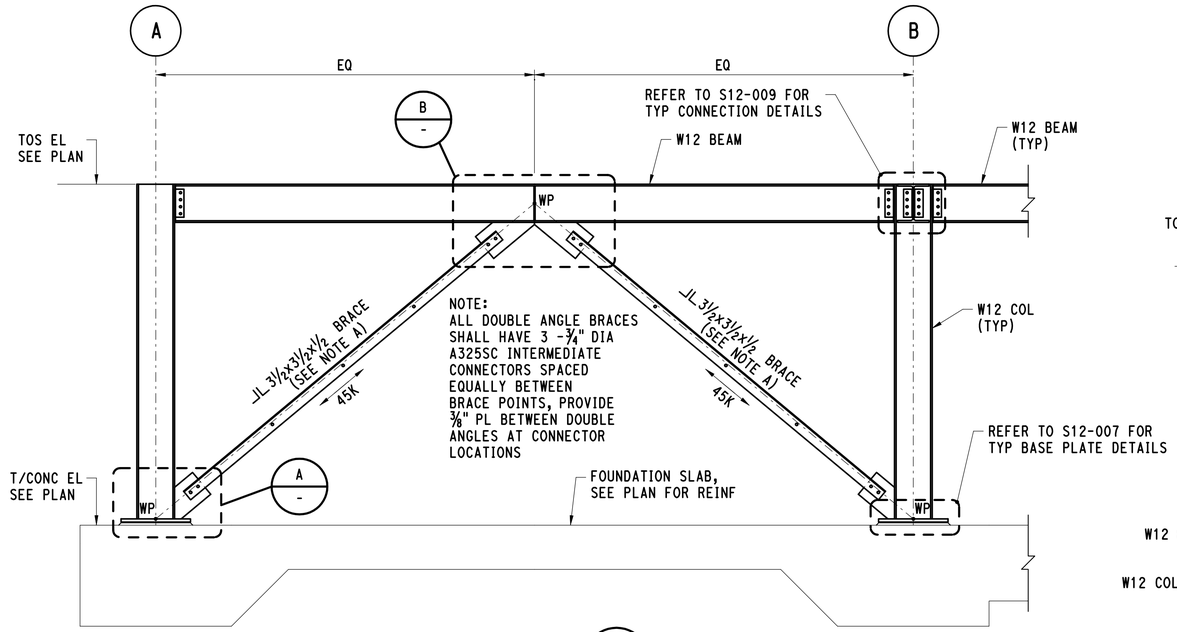

SECTION 3 / S12-004
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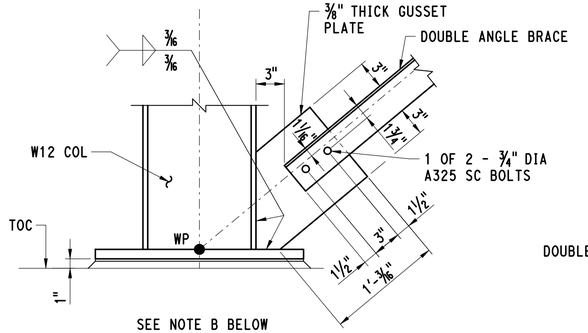
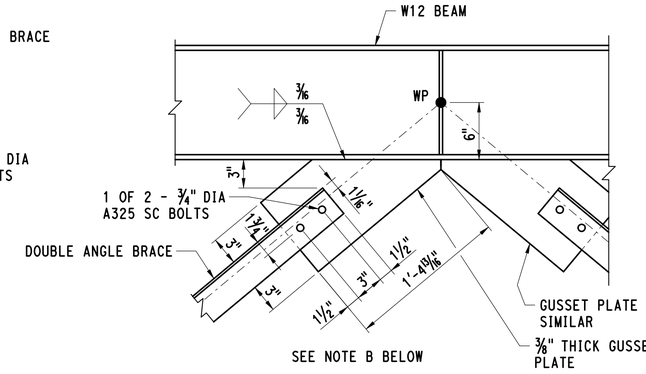
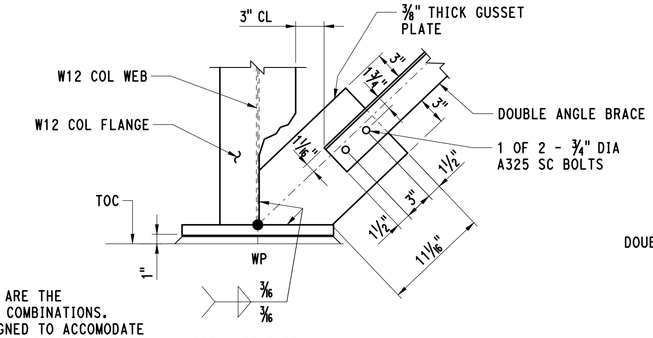


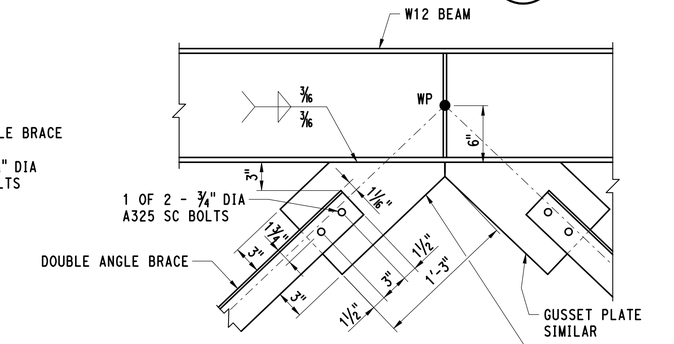
GUSSET PLATE DETAIL A
SCALE: 1½" = 1'-0"



GUSSET PLATE DETAIL B
SCALE: 1½" = 1'-0"

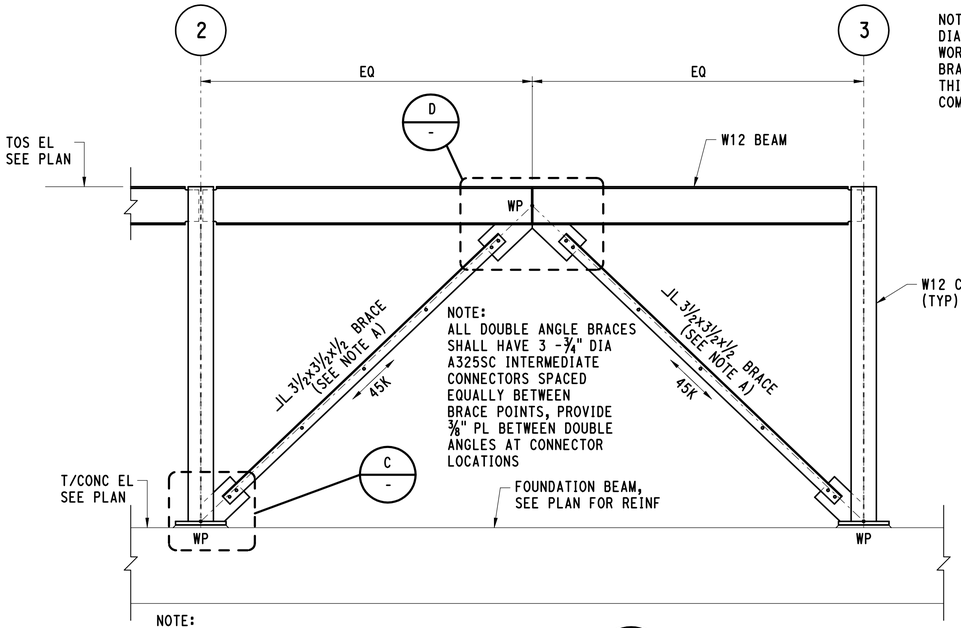


GUSSET PLATE DETAIL C
SCALE: 1½" = 1'-0"



GUSSET PLATE DETAIL D
SCALE: 1½" = 1'-0"

NOTE A:
DIAGONAL LOADS SHOWN ARE THE WORST CASE LRFD LOAD COMBINATIONS. BRACES SHALL BE DESIGNED TO ACCOMODATE THIS DESIGN LOAD IN EITHER TENSION OR COMPRESSION.



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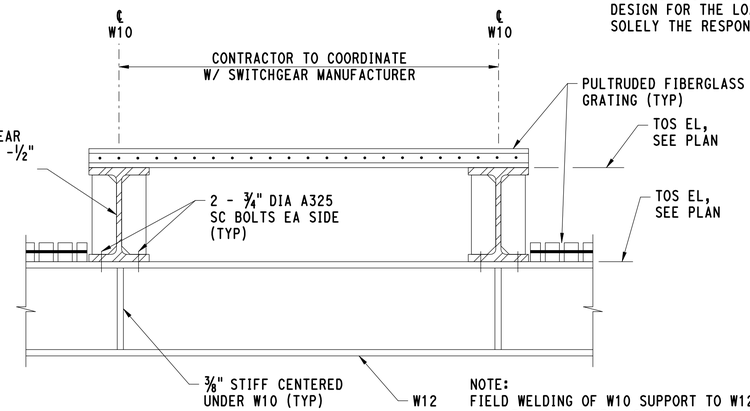
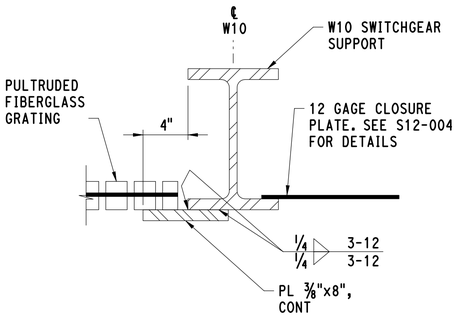


SECTION 5 / S12-004
NOT TO SCALE

NOTE:
FIELD WELDING OF W10 SUPPORT TO W12 BEAM MAY BE SUBSTITUTED AS LONG AS DAMAGED STEEL PROTECTIVE COATINGS ARE RESTORED.

NOTE B:
DETAILS SHOWN ARE SCHEMATIC ONLY. STEEL FABRICATOR IS RESPONSIBLE FOR DELEGATED DESIGN FOR THE LOADS PROVIDED WITHIN. FINAL CONNECTION DESIGN AND DETAILING IS SOLELY THE RESPONSIBILITY OF THE STRUCTURAL STEEL SUBCONTRACTOR.



SECTION 6 / S12-004
NOT TO SCALE

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REV.	DATE	REVISION DESCRIPTION	SHEET NO.

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Plotted Date: 11/7/2014

DESIGNER/DRAFTER: RC/JLW
CHECKED BY: MH
SCALE AS NOTED

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

Filename: 16_B12SN_3010088_S12-008.dgn

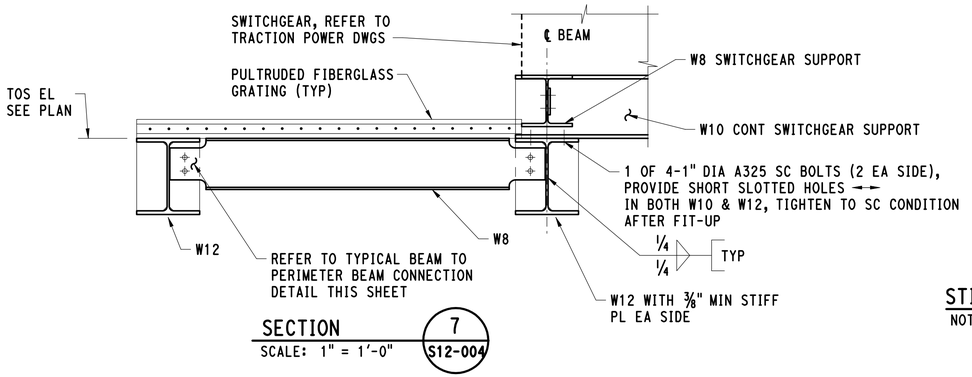
SIGNATURE BLOCK
PARSONS BRINCKERHOFF
GLASTONBURY, CT

PROJECT TITLE:
NEW HAVEN RAIL YARD
FACILITIES IMPROVEMENTS
YARD POWER UPGRADE

TOWN: NEW HAVEN

DRAWING TITLE:
STRUCTURAL
SECTIONS AND DETAILS-2

PROJECT NO. 301-0144
DRAWING NO. S12-008
SHEET NO. 08.09



SECTION 7 / S12-004
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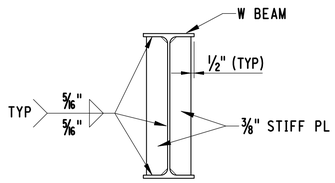
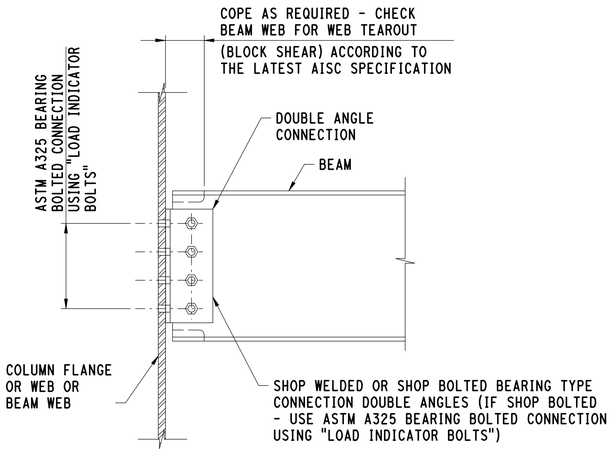
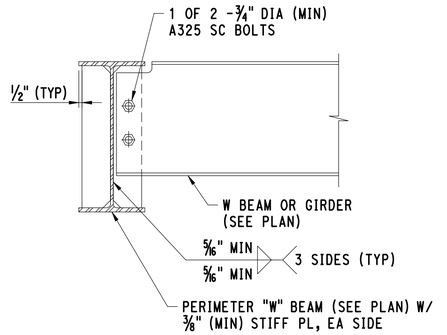


STIFFENER DETAIL AT GUSSET PLATE LOCATION I / -
NOT TO SCALE



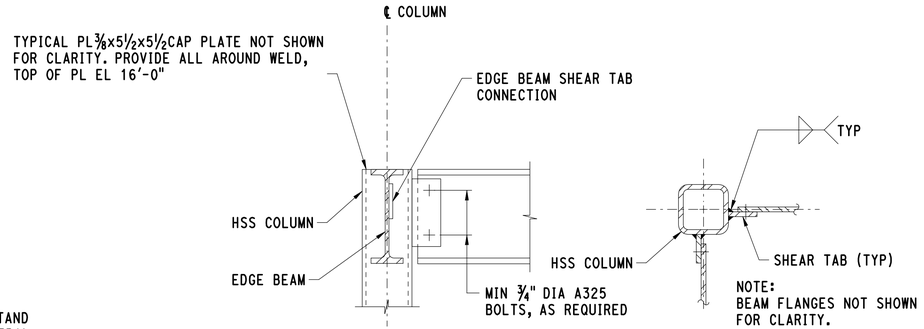
SIMPLE BEAM CONNECTION DETAIL K / -
NOT TO SCALE



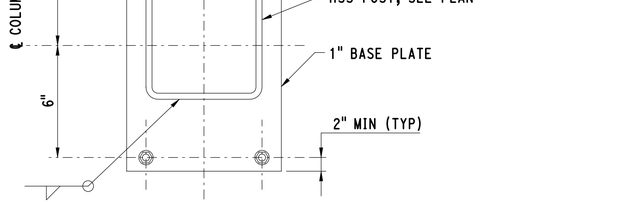
NOTE:

PROVIDE SINGLE OR DOUBLE ROW OF BOLTS AS REQUIRED TO WITHSTAND THE DESIGN REACTION INDICATED IN THE SPECIFICATIONS AND GENERAL NOTES. COPE BOTTOM FLANGE AS REQUIRED.

BEAM TO PERIMETER BEAM CONNECTION (U.N.O.) L / -
NOT TO SCALE

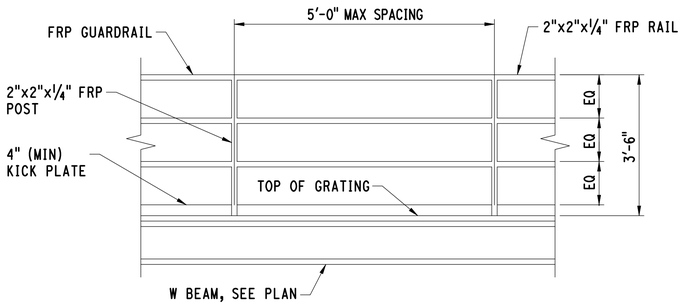


WIDE FLANGE TO HSS POST CONNECTION M / -
NOT TO SCALE

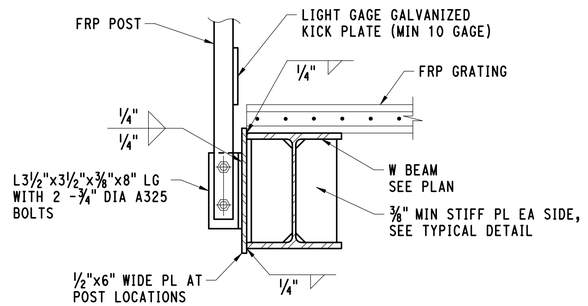


PLAN

BASE PLATE DETAIL @ HSS COLUMN BASE N / -
NOT TO SCALE



ELEVATION



SECTION

FRP GUARDRAIL DETAIL Q / -
NOT TO SCALE

REV.	DATE	REVISION DESCRIPTION	SHEET NO.

THE INFORMATION, INCLUDING ESTIMATED QUANTITIES OF WORK, SHOWN ON THESE SHEETS IS BASED ON LIMITED INVESTIGATIONS BY THE STATE AND IS IN NO WAY WARRANTED TO INDICATE THE CONDITIONS OF ACTUAL QUANTITIES OF WORK WHICH WILL BE REQUIRED.

Plotted Date: 11/5/2014

DESIGNER/DRAFTER: RC / JLW
CHECKED BY: MH
SCALE AS NOTED

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

Filename: 16_B12SN_3010088_S12-009.dgn

SIGNATURE/BLOCK: STATE OF CONNECTICUT ANDREW A. NOTT LICENSED PROFESSIONAL ENGINEER

PARSONS BRINCKERHOFF
GLASTONBURY, CT

PROJECT TITLE:
NEW HAVEN RAIL YARD FACILITIES IMPROVEMENTS
YARD POWER UPGRADE

TOWN: NEW HAVEN

DRAWING TITLE:
STRUCTURAL TYPICAL STEEL DETAILS

PROJECT NO. 301-0144
DRAWING NO. S12-009
SHEET NO. 08.10

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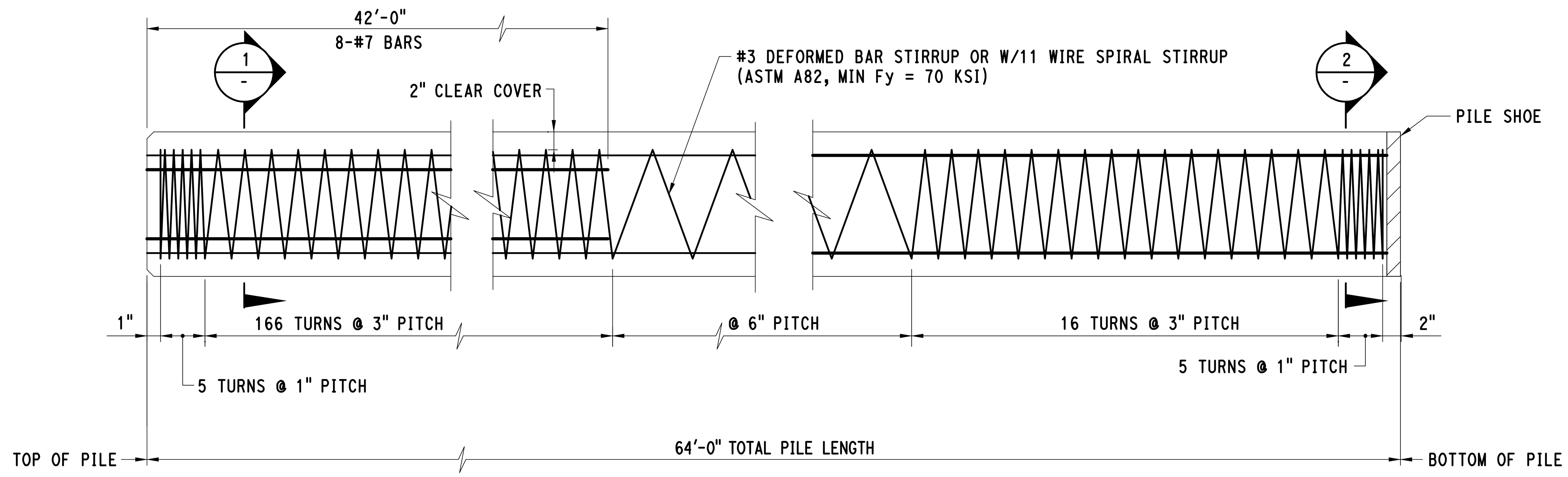


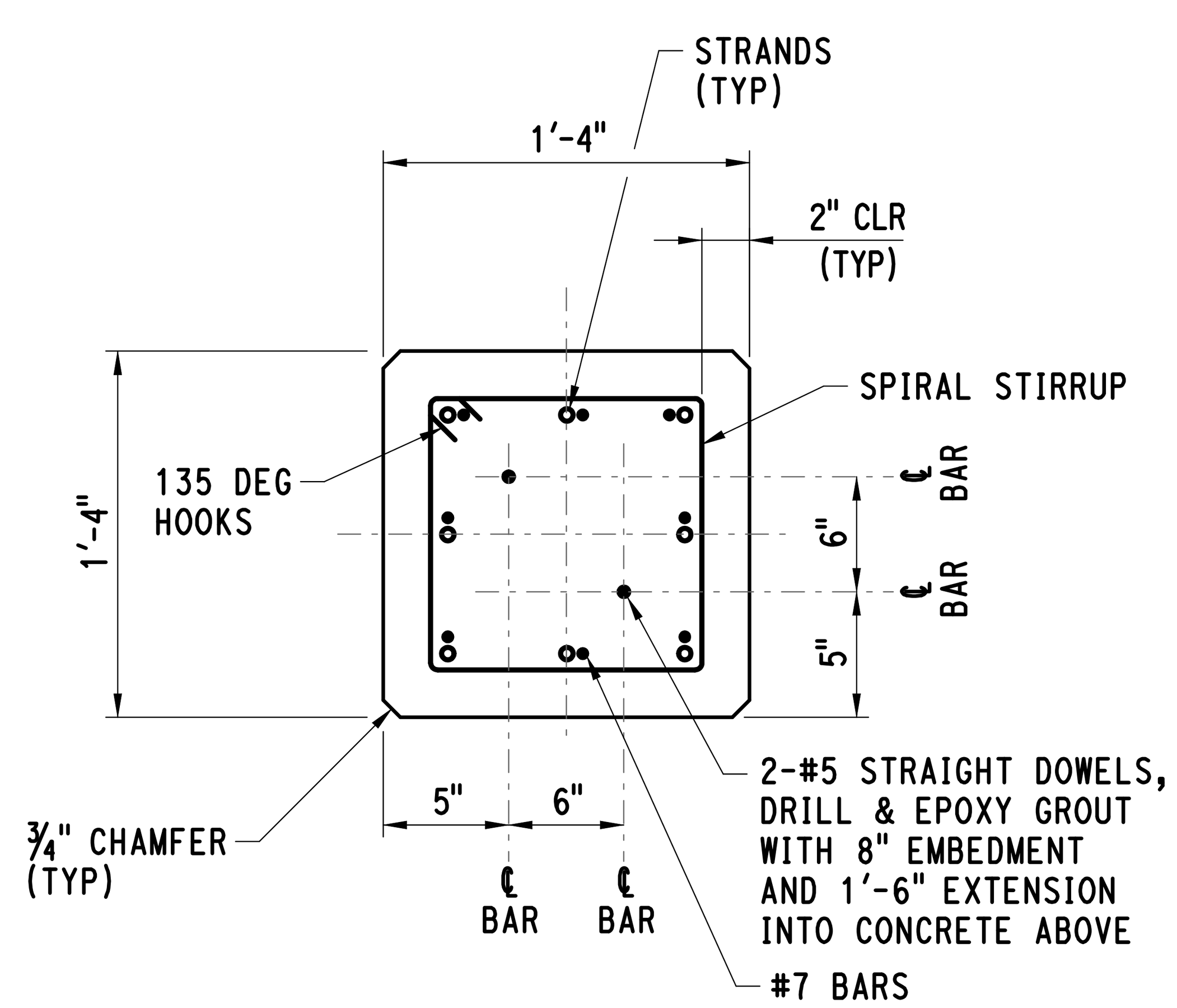
YARD POWER UPGRADE
PILE ELEVATION
NOT TO SCALE

NOTES:

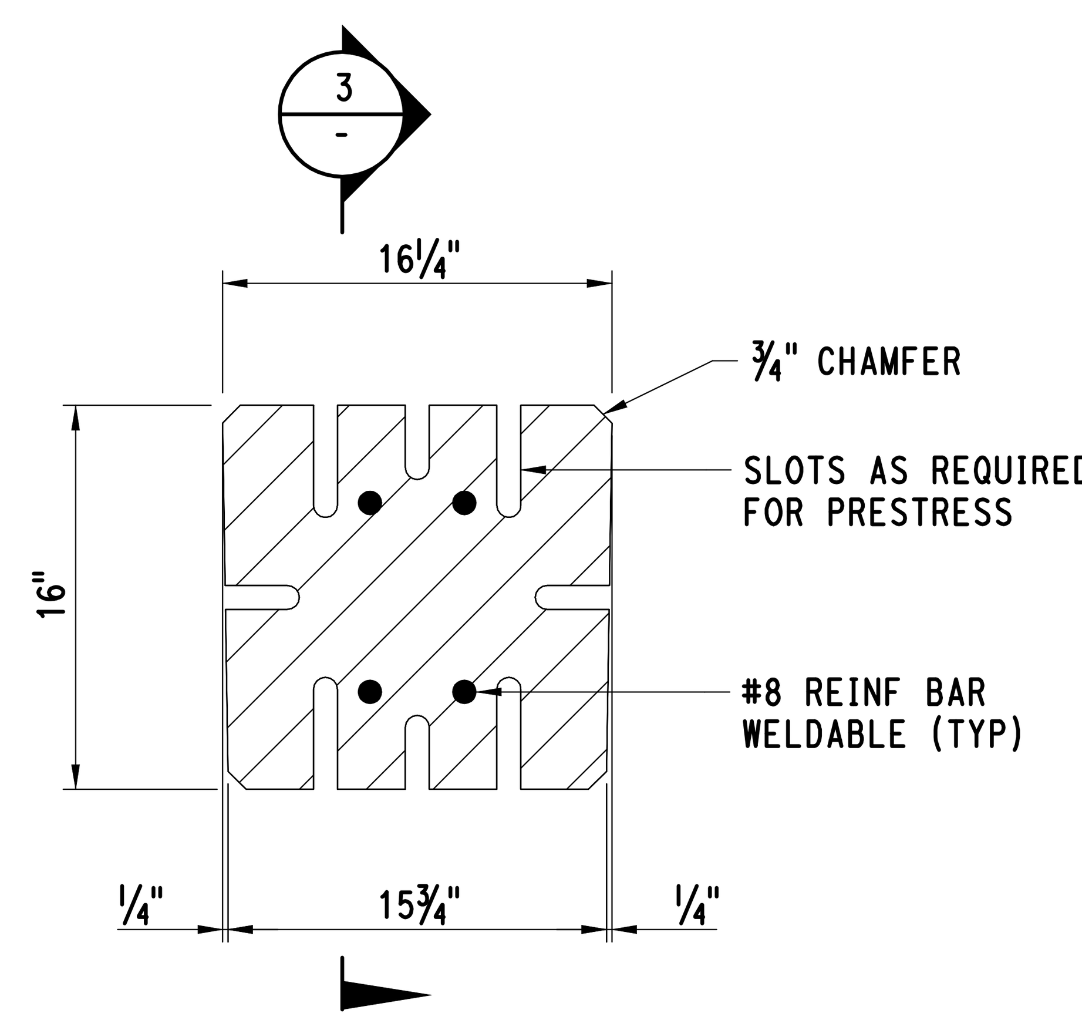
1. CONCRETE FOR PRESTRESSED CONCRETE PILES SHALL HAVE MINIMUM COMPRESSIVE STRENGTH OF:

   f'ci = 3750 PSI AT TRANSFER
   f'c = 5000 PSI AT 28 DAYS

2. PRESTRESSED STRANDS SHALL BE LOW RELAXATION ½" DIAMETER SEVEN WIRE UNCOATED STRANDS CONFORMING TO ASTM A416 GRADE 270.
3. INITIAL TENSION ON ½" DIAMETER STRANDS SHALL BE 31,000 LBS PER STRAND (JACKING TENSION).
4. NO PRESTRESS SHALL BE TRANSFERRED TO THE CONCRETE UNTIL IT HAS ACHIEVED THE MINIMUM COMPRESSION STRENGTH AT TRANSFER AS SHOWN BY THE CYLINDER TEST.
5. SHOULD SPLICES BE REQUIRED, THE CONTRACTOR SHALL PROVIDE A COMPLETE SUBMITTAL TO ACHIEVE FULL CONTINUITY FOR REVIEW.
6. PILE REINFORCING SHOWN REPRESENTS THE MINIMUM REINFORCING REQUIRED FOR THE PERMANENT DESIGN. THE CONTRACTOR SHALL DESIGN THE PILE REINFORCING AS PER THE PILE SPECIFICATIONS AND PROVIDE ANY ADDITIONAL REINFORCING FOR LIFTING AND HANDLING REQUIREMENTS.
7. MAXIMUM DESIGN PILE LOAD = 100 KIPS.
8. PILES SHALL BE DRIVEN TO A DEPTH WITH TIP ELEVATION OF 59 FEET.
9. ONE (1) TEST PILE SHALL BE DRIVEN WITH PDA TESTING PERFORMED ON THE PILE WITH A THREE DAY RESTRIKE REQUIRED. REFER TO SPECIFICATION "DYNAMIC PILE DRIVING ANALYSIS (P.D.A.) TEST". PILE LOADING TESTS ARE NOT REQUIRED.
10. PILE ELEVATION SHOWN REFLECTS 64'-0" PILE. IF PDA TESTING INDICATES THAT AN ALTERNATE PILE LENGTH IS APPROPRIATE, THE CONTRACTOR SHALL SUBMIT A REVISED PILE CONFIGURATION FOR REVIEW AND APPROVAL BY THE ENGINEER.



SECTION 1
NOT TO SCALE



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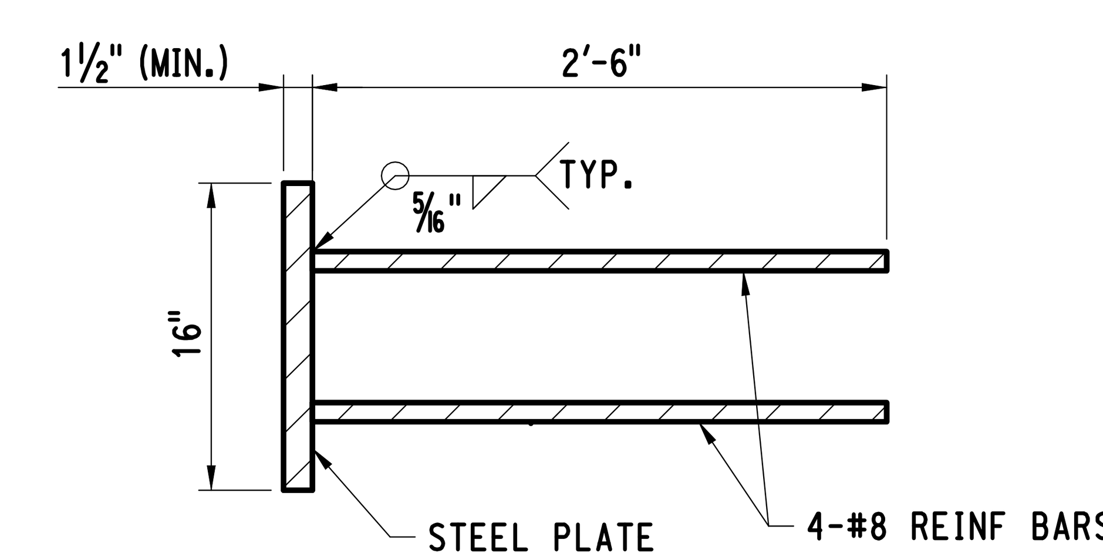

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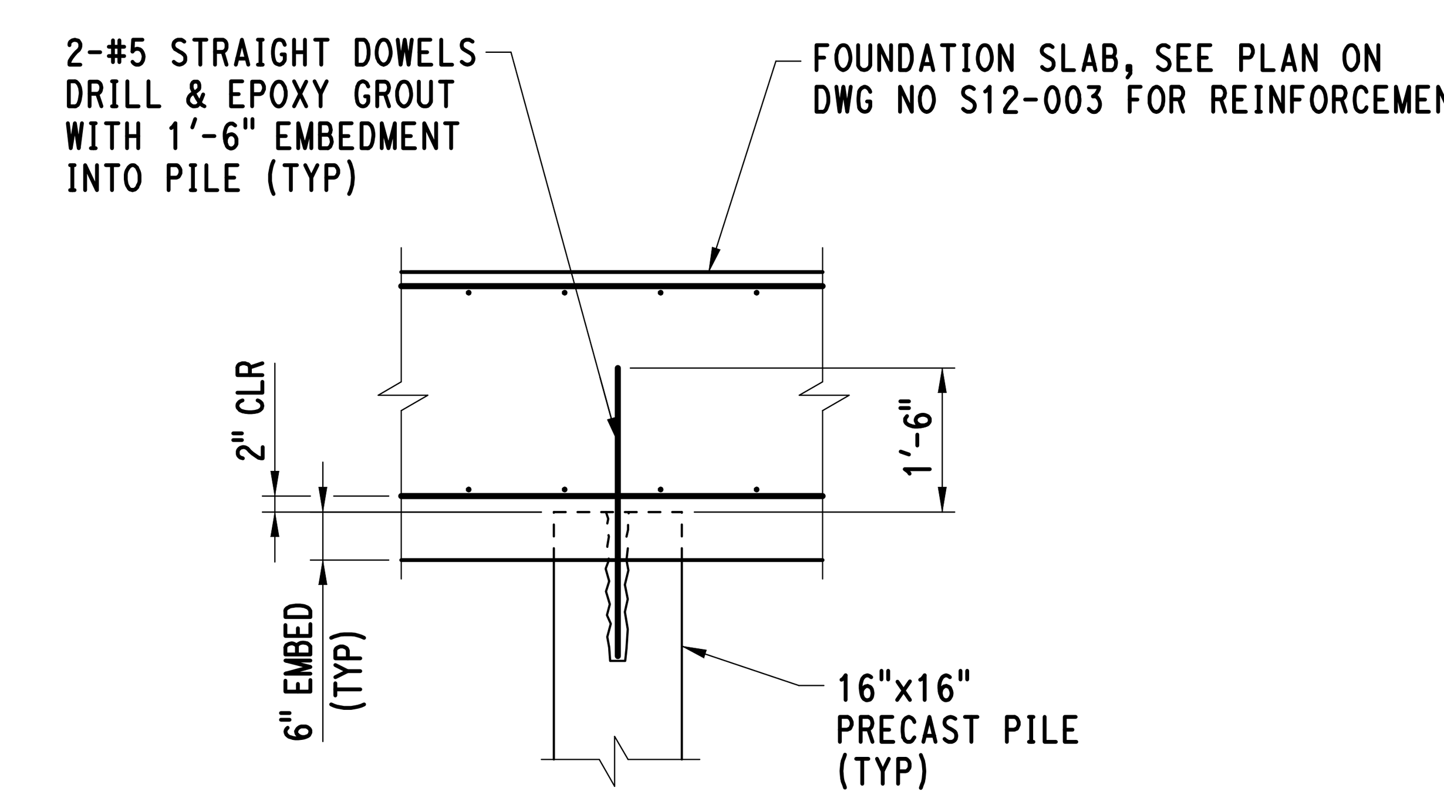

PILE EMBEDMENT DETAIL
SCALE: ½" = 1'-0"

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DESIGNER/DRAFTER: RC/JLW
CHECKED BY: MH
SCALE AS NOTED

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

Filename: 16_B12SN_3010088_S12-010.dgn

SIGNATURE/BLOCK:
PARSONS BRINCKERHOFF
GLASTONBURY, CT

PROJECT TITLE:
NEW HAVEN RAIL YARD
FACILITIES IMPROVEMENTS
YARD POWER UPGRADE

TOWN: NEW HAVEN

DRAWING TITLE:
STRUCTURAL
PILE SECTIONS AND DETAILS

PROJECT NO. 301-0144
DRAWING NO. S12-010
SHEET NO. 08.11